



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/575,890

08/16/2006

Walter Demuth

1006/0113PUS1

5525

60601 7590 07/08/2010  
Muncy, Geissler, Olds & Lowe, PLLC  
4000 Legato Road  
Suite 310  
FAIRFAX, VA 22033

EXAMINER

ROSATI, BRANDON MICHAEL

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

07/08/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,890	<b>Applicant(s)</b> DEMUTH ET AL.	
	<b>Examiner</b> BRANDON M. ROSATI	<b>Art Unit</b> 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 and 33 is/are pending in the application.
- 4a) Of the above claim(s) 11 and 18-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-17, 24-31, and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/8/2010</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/11/2010 has been entered.

### ***Claim Objections***

2. Claims 1-10, 12, 13, and 24-28 are objected to because of the following informalities:

In claim 1, line 10, the word “the” should be inserted before the phrase “the housing casing” so as to make grammatical sense. Appropriate correction is required.

Claims 2-10, 12, 13, and 24-28 are objected to as being dependent from an objected to independent claim.

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-7, 10, 12-15, 24-26, 29-31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Demuth et al. (DE 10260030) in view of Shohei (JP 2000081289 A).

Regarding claims 1 and 29, Demuth et al. disclose in Figure 1, all the claimed limitations including a heat exchanger having a block which has pipes (2) on which a first and second medium can flow on respective sides, having flow ducts (4), and pipe ends, end pieces (combination of (8, 12, and 16) and (24, 28, and 30), each having a base plate (8 and 24), a

Art Unit: 3744

diverter plate (12 and 28) and a cover plate (16 and 30), as well as an inlet and outlet chamber (20 and 21). It is noted that the phrases “for a motor vehicle,” “being possible to conduct the first medium from the inlet chamber to the outlet chamber to the outlet chamber through the flow ducts,” and “can flow on the secondary side” are statements of intended use and the device is capable of performing the function. Demuth et al. do not disclose a housing casing surrounding the pipes having an inlet and outlet, the open ends of the housing casing being closed by the first end piece and the second end piece. However, Shohei disclose in Figures 5 and 6, a heat exchanger which has a housing (see area (19)) which surrounds pipes and its open ends are closed by first and second end pieces (16 and 18). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of Demuth et al. with the housing casing of Shohei because this would allow for the heat exchange unit to be a self contained unit having the benefit of allowing the heat exchanger to utilize two liquids as fluids instead of being limited to gas.

Regarding claim 2, Demuth et al. disclose in Figure 1, flat pipes (2). It is noted that claim 2 contains a product by process limitation (i.e. extruded). Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicants to come forward with evidence establishing an unobvious difference between the two. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983)

Regarding claim 3, Demuth et al. disclose in Figure 1, each pipe having a plurality of flow ducts (4).

Regarding claim 4, Demuth et al. disclose in Figure 1, the heat exchanger block having two end pieces (combination of (8, 12, and 16) and (24, 28, and 30))

Art Unit: 3744

Regarding claim 5, the combined teachings of Demuth et al. and Shohei disclose the housing. It is noted that, when in combination with Demuth et al., the housing would be between the end pieces. Further, it would have been obvious to one of ordinary skill to position the housing between the two end pieces since this is the region of the second fluid and thus it would allow for the fluid to easily contained by having the housing positioned between the two end pieces.

Regarding claim 6, Demuth et al. disclose in Figure 1, two plates of the end piece are integral.

Regarding claim 7, Shohei disclose in Figure 5 and 6, a housing. Although the specific material it (i.e. metal) is not mentioned, it is obvious and well known to utilize a metal housing since metal is often used in heat exchangers because of its good heat transfer characteristics. Further, it is obvious to use a metal housing as evidenced by the previously used piece of prior art, Carpentier (U.S. 2001/0050166 A1).

Regarding claim 10, Shohei disclose in Figure 5 and 6, a housing (1) which has an inlet (13) and outlet (11) arranged on opposite sides of the housing.

Regarding claim 12, Shohei disclose in Figure 5 and 6, a housing (1) which has an inlet (13) and outlet (11) arranged on opposite ends of the housing.

Regarding claim 13, the combined teachings of Demuth et al. and Shohei disclose distributor and collector chambers (regions immediately inside the inlet and outlet) (see Shohei Figure 5 and 6).

Regarding claims 14 and 30, Demuth et al. disclose in Figure 1, corrugated pieces of sheet metal (i.e. fins) (7) arranged between the pipes. It is noted that although Demuth shows

Art Unit: 3744

tubes and fins running in the vertical direction, nothing in the reference prevents the structure from being utilized in a horizontal configuration.

Regarding claim 15, Shohei discloses in Figure 5, 6, and 8, corrugated pieces of sheet metal (i.e. fins) (see Figure 8) having a longitudinal extent corresponding to the inlet and outlet.

Regarding claim 24, Shohei discloses in Figure 5, 6, and 8, ribs or inserts which transverse ducts for the second medium (see Figure 8).

Regarding claims 25 and 26, the combined teachings of Demuth et al. and Shohei disclose all the structural limitations of the claims. The phrases “configured for a single flow on the primary side” (as per claim 25) and “can be configured for a dual flow or more on the primary side” (as per claim 26) are statements of intended use and the device is capable of performing the functions. The applicant should be reminded that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

Regarding claim 31, the combined teachings of Demuth et al. and Shohei disclose all the structural limitations of the claim including the length of the corrugated pieces (7) being less than a distance from the end plate to the second end plate (Figure 1 of Demuth et al.).

Regarding claim 33, the combined teachings of Demuth et al. and Shohei disclose all the structural limitations of the claim including the housing contacting the first end piece and the second end piece and extending from the first end piece to the second end piece (see Shohei Figure 5).

Art Unit: 3744

5. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Demuth et al. (DE 10260030) in view of Shohei (JP 2000081289 A) in further view of Carpentier (U.S. Pub. No. 2001/0050166 A1).

Regarding claim 16, the combined teachings of Demuth et al. and Shohei disclose all the limitations of the claim except the sheet metal being in a rectangular shape. However, Carpentier disclose in Figure 1, corrugated pieces of sheet metal (i.e. fins) (see Figure 3) which are rectangular in shape. Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the combined teachings of Demuth et al. and Shohei with the rectangular sheet metal of Carpentier because this would help to vary the flow characteristics inside the device (i.e. velocity, etc...) which would increase the overall amount of heat transfer.

Regarding claim 17, Carpentier disclose in Figure 1, corrugated pieces of sheet metal (i.e. fins) (see Figure 3) which are embodied in the form of a parallelogram and leave an approximate triangular inflow and outflow region between the pipes.

6. Claims 8 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Demuth et al. (DE 10260030) in view of Shohei (JP 2000081289 A) in further view of Hayashi et al. (U.S. Pub. No. 2003/0019616 A1).

Regarding claim 8, the combined teachings of Demuth et al. and Shohei disclose all the claimed limitations except the casing being connected by solder. However, Hayashi discloses a heat exchanger in which the parts are connected together by soldering (Paragraphs [0030]-[0033]). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the combined teachings of Demuth et al. and Shohei with the

Art Unit: 3744

soldering of Hayashi et al. because solder is well known and often used in heat exchanger construction so as to form a fluidly tight heat exchanger and reduce the risk of failure.

Regarding claim 9, Hayashi et al. disclose in Figure 3B a housing which is rectangular in cross section having 4 sides.

7. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Demuth et al. (DE 10260030) in view of Shohei (JP 2000081289 A) in further view of Hirao et al. (U.S. Patent No. 6,237,357 B1).

Regarding claim 27, the combined teachings of Demuth et al. and Shohei disclose all the claimed limitations including utilizing two fluids, but not the first medium being a refrigerant which can operate in dual phase. However, Hirao et al. disclose a heat exchanger which utilizes refrigerant as a fluid and operated in a dual phase (Column 1, line 63- Column 2, line 9). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the combined teachings of Demuth et al. and Shohei with the refrigerant of Hirao et al. because this is a well known type of refrigerant used in heat exchangers and having a dual phase refrigerant allows for the overall amount of heat transfer to increase since more heat can be exchanged by the fluid.

Regarding claim 28, the combined teachings of Demuth et al, Shohei, and Hirao et al. disclose all the claimed limitations including utilizing two fluids (see Shohei) and having one of the fluids be a refrigerant (see Hirao et al.). It is noted that it would be an obvious mechanical expedient to one of ordinary skill to choose a heat exchange fluid such as refrigerant for either fluid in the heat exchange device, since it is well known that heat exchangers often utilize refrigerant due to its good heat exchange properties.



***Response to Arguments***

8. Applicant's arguments with respect to claims 1-10, 12-17, 24-31, and 33 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues (p 11) that the reference does not teach "corrugated pieces of sheet metal with longitudinal ducts running in a longitudinal direction." In response, to applicant's argument, the Examiner disagrees. The combined teachings of Demuth and Shohei disclose all the claimed limitations, especially Demuth Figure 1, shows the structure of the ducts (2) and corrugated pieces (7). Figure 1 of Demuth does show the tubes running in the vertical direction; however, nothing in the reference prevents its orientation from being changed to the horizontal. Therefore, applicant's arguments are not persuasive and the rejection is maintained.

***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDON M. ROSATI whose telephone number is (571)270-3536. The examiner can normally be reached on Monday-Friday 8:00am- 4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on (571) 272-4834 or (571) 272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 3744

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BMR  
7/1/2010

/Cheryl J. Tyler/  
Supervisory Patent Examiner, Art Unit  
3744